VOICES FOR CLIMATE CHANGE IN ZAMBIA

A Photographic Journey

VOICES FOR CLIMATE CHANGE IN ZAMBIA

A Photographic Journey

MINISTRY OF GREEN ECONOMY AND ENVIRONMENT

SASSCAL

Ministry of Green Economy and Environment (MGEE)
Corner of John Mbita and Nationalist Roads, PO Box 30147, Lusaka, Zambia
Tel: +260 211 252395/94/91 – Email: info@mgee.gov.zm
www.mgee.gov.zm

Zambia Environmental Management Agency (ZEMA)
Corner Church and Suez Road, Plot 6975 Ridgeway, Lusaka, Zambia
Tel: +260 211 254023/59 – Fax: +260 211 254164 – Email: info@zema.org.zm
www.zema.org.zm

Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL)
National Remote Sensing Center, 15302 Airport Road, Lusaka, Zambia
Tel: +260 950 655 910 – Email: contact@sasscal.org
www.sasscal.org

©2024 Anayawa Nyambe, ZEMA, SASSCAL, MGEE

This book is a product of the Eco-Expressions Zambia: Voices for Climate Action Project, funded by the U.S. Department of State's Bureau of Educational and Cultural Affairs, with Meridian International Center as the implementing partner. This initiative is part of the International Visitor Leadership Program Impact Awards 2024.

All rights reserved. Photographs featuring individuals used with permission. The contents of this book may be quoted with due credit to the authors and publishing partners, but may not be reproduced, all or in part, without permission from the copyright holders.

Any views expressed in this publication are those of the author(s). They do not necessarily represent the views of the project partners, the financial sponsors or the reviewers.

Citation: Nyambe Anayawa. *Voices for Climate Change in Zambia: A Photographic Journey*. Lusaka: Self-Published, 2024.

Author Anayawa Nyambe
Design and print edit by Imasiku Nyambe, Digikraft Media
Edit by Frank Gwaba, MGEE

PREFACE

The world is currently facing one of its greatest challenges—climate change. Its impacts are not isolated to just one area of life but cover various sectors such as health, agriculture, energy, and the economy. Zambia, like many other countries, is already experiencing the consequences of climate change. From prolonged droughts to shifts in agricultural productivity. However, it is only when people recognize and identify the climate issues affecting their local communities that we can begin to create sustainable solutions that benefit everyone, ensuring that government policies are both effective and impactful.

The U.S. Department of State's International Visitor Leadership Program (IVLP) is a professional exchange program that offers emerging foreign leaders the opportunity for short stays in the USA to gain cultural experience, network, and share knowledge.

During the course of my IVLP experience in Climate Resiliency and Health Security, it was stated that each generation is encouraged to tackle the challenges of its time, with particular encouragement for younger generations to get involved. This became apparent during my participation in various engagements in Washington, District of Columbia, Phoenix and Tucson, Arizona, and New Orleans, Louisiana.

For instance, after Hurricane Katrina, residents in New Orleans created "lighthouses" for shelter, food, and support during power outages. Arizona, facing water scarcity and extreme heat, communities implemented early warning systems and cooling centers to protect people from heat-related illnesses. All depicting the element of community coming together to solve problems.

Furthermore, as an artist at heart, and through my past work with farmers in rural Monze and Sioma, I have seen how photographs can spark meaningful discussions about climate change. In essence, Art has the power to communicate complex issues such as climate change. It is these experiences led to the creation of the Eco-Expressions Zambia: Voices for Climate Action project.

The project was conceived to open up dialogue on climate change in Zambia. By using photography to capture the reality of what is happening in local communities from around the country, with the aim of fostering greater awareness and involvement in addressing this pressing issue.

This project is not only about documenting climate change but empowering Zambians to take ownership of the solutions. Through the photographic contributions of local people, experts, organizations and institutions, the lived experiences of Zambians who are at the forefront of climate change impacts or actively involved in practicing solutions are able to be conveyed. It is my belief that through active participation and storytelling, we can move towards a more sustainable and climate-resilient future for Zambia and beyond.

ACKNOWLEDGEMENTS

This photo book on climate change impacts and solutions in Zambia would not have been possible without the invaluable contributions of many individuals and organizations.

First and foremost, I would like to express my heartfelt gratitude to Meridian Centre and US Department of State who supported this project financially and provided mentorship. A word of thanks is equally given to the Embassy of United States of America in Zambia. Your support has made it possible to bring this book to life.

Special thanks to the talented photographers, both professional and amateur, who generously shared their stunning and thought-provoking images. This includes the Zambian public who submitted photographs, thank you for allowing us to see climate change through your eyes. Your images tell powerful stories of the daily challenges and triumphs in communities across the country, reminding us that climate action is both a personal and collective responsibility.

I am also deeply appreciative of the environmental experts from the Zambia Environmental Management Agency (ZEMA), Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL) and the Ministry of Green Economy and Environment (MGEE) who shared their insights and provided the context behind the images. Your dedication to addressing climate change in Zambia has been instrumental in shaping this book.

Additionally, I would like to acknowledge the incredible individuals whose contributions have been invaluable to this project, even if not fully recognized here. These include Abel Kamfwa, Abigirl Saungweme, Alfred Nkole, Bertha Musonda, Brian Moonga, Bruce Danckwerts, Chisha Mutale, David Munyama, Emmah Nakapizye, Exildah Kamundonu, Friday Wisdom Chamfya, Gidion David Lungu, Ian Saungweme, Inonge Nawa Lifanu, Joe Meiman, John Simasiku, Michael Dabwitso Mumba, Mike Tembo, Moses Musonda, Mundia Nyambe, Namitondo Nyambe, Noah Harris Makwilimba, Prince Kunda, Rodney Sikamwaya, Samantha Munang'andu, Sikopo Pauline Nyambe-Galbraith, Susan Mwelwa, Veronica Araujo, Wiersma John Kombe, Yande Yombwe, and many more. I am deeply grateful for your enthusiasm and passion. Your efforts are greatly appreciated, and your voices are a vital part of this project.

A word of thanks also goes to groups and institutions such as Action Aid Zambia, Aim Higher Youth Cooperative Zambia, Ministry of Youth, Sport and Arts, Visual Arts Centre, Zambia News and Information Services (ZANIS), Zambia United States Exchanges Alumni Association and many more. The encouragement and support you rendered is greatly appreciated.

To my family, friends, colleagues and the book production team including Charity Nalweya, Frank

Gwaba, Imasiku Nyambe, Morris Manyika, and Wells Chifunda, thank you for your unwavering support throughout the development of this book. Your encouragement, advice, and belief in the importance of this work have been a constant source of motivation.

Finally, I would like to give thanks to God for granting inspiration, grace, and perseverance to see this project through.

This book is a collective effort, and I hope it will inspire action and reflection on the urgent need to address climate change in Zambia and beyond.

With sincere gratitude,

Dr. Anayawa Nyambe

IVLP Impact Awardee 2024

EXECUTIVE SUMMARY

Climate change poses one of the greatest challenges of our time, and its effects are being felt across every corner of the globe. In Zambia, the impacts are particularly pronounced—shifting weather patterns, prolonged droughts, and intense flooding threatening the livelihoods of millions. These changes affect several sectors including agriculture, water resources, health, and the environment, with vulnerable communities being disproportionately affected. However, amidst these challenges, there are stories of resilience, adaptation, and innovation emerging from local communities across the country.

This book addresses the United Nations Sustainable Development Goal 13 for Climate Action, highlighting its cross-cutting nature by exploring the diverse sectors impacted by climate change. Drawing on perspectives from all ten of Zambia's administrative provinces (Central, Copperbelt, Luapula, Lusaka, Eastern, Muchinga, Northern, North-Western, Southern, and Western), this book sheds light on how communities across the country are experiencing and responding to climate change. From the devastating drying up of water sources to the innovative recycling efforts of a fashion brand, these stories illustrate the varied ways Zambians are navigating the challenges and opportunities presented by climate change.

At its core, this book emphasizes the importance of climate action in Zambia. As the country's economy is heavily dependent on natural resources, adapting to climate change is not just an environmental necessity—it is critical for food security, economic stability, and the well-being of future generations. The efforts documented here serve as a reminder that while Zambia faces significant climate-related challenges, local solutions and proactive measures can inspire hope and positive change.

Through these images and stories, it is hoped to inspire a greater commitment to climate action, both locally and globally, and demonstrate the crucial role of community-led efforts in building a more sustainable Zambia.

LIST OF ABBREVIATIONS AND ACRONYMS

AER	Agro-Ecological Region
CO_2	Carbon dioxide
GHG	Green House Gases
IFPRI	International Food Policy Research Institute
IVLP	International Visitor Leadership Program
MGEE	Ministry of Green Economy and Environment
N_2O	Nitrous oxide
NO-GAIN	Notre Dame Global Adaptation Initiative
SASSCAL	Southern African Science Service Centre for Climate Change and Adaptive Land Management
USA	United States of America
ZANIS	Zambia News and Information Services
ZEMA	Zambia Environmental Management Agency

TABLE OF CONTENTS

PREFACE iii

ACKNOWLEDGEMENTS iv

EXECUTIVE SUMMARY vi

LIST OF ABBREVIATIONS AND ACRONYMS vii

TABLE OF CONTENTS viii

CHAPTER 1: A CHANGING ZAMBIA 2

CHAPTER 2: AGRICULTURE 4

CHAPTER 3: FORESTRY 12

CHAPTER 4: WATER 18

CHAPTER 5: ENERGY 28

CHAPTER 6: INFRASTRUCTURE AND TRANSPORT 32

CHAPTER 7: HEALTH 44

CHAPTER 8: SOCIAL AND ENVIRONMENT 48

CHAPTER 9: THE ROAD AHEAD 56

REFERENCES 58

EDITORIAL AND PRODUCTION TEAM 60

CHAPTER 1: A CHANGING ZAMBIA

Climate change refers to a long-term shift in global or regional climate patterns, involving significant alterations in temperature, precipitation, and wind patterns. While these changes can be natural, human activities, particularly in recent decades, have accelerated these shifts. For instance, the burning of fossil fuels such as coal, oil, and natural gas releases greenhouse gases (GHG) such as carbon dioxide (CO_2) and nitrous oxide (N_2O), which trap heat within the Earth's atmosphere, leading to global warming, the rise in the global average temperature. While deforestation, the large cutting down of trees, releases stored CO_2 back into the atmosphere and reduces the capacity of forests to absorb CO_2, worsening the greenhouse effect. Increased livestock farming releases large amounts of methane and fertilizers contribute to N_2O emissions, further exacerbating the problem.

As the planet warms, we are experiencing environmental and social transformations that are redefining the way we live. Glaciers are melting, sea levels are rising, and extreme weather events have become more common. Zambia, spanning over 750,000 Km^2 on a high plateau in southern sub-Saharan Africa, is not immune to these changes and is experiencing the effects of climate change (The World Bank, 2023).

Zambia has a predominantly subtropical climate divided into three Agro-Ecological Regions (AER) based on rainfall, temperature, and soils (International Food Policy Research Institute [IFPRI], 2023). The south and southwest areas (AER I, covering 20% of the Zambia) are prone to drought and receive less than 800 mm of annual precipitation, while central and eastern areas (AER IIa and IIb, covering 36% of the country) have a warm semi-arid climate with an annual rainfall of about 800–1,000 mm, and the north and northwestern area (AER III, covering 44% of the country) has a humid subtropical climate with rainfall above 1,200 mm (IFPRI, 2023; Zambia Environmental Management Agency [ZEMA] et al., 2012). Seasonal patterns are typically divided into a hot, dry period from mid-August to mid-November, a rainy/wet season from November to April, and a cool dry season from May to mid-August (IFPRI, 2023). The country's mean temperature ranges from 6°C in the cold dry season to 35°C in the hot dry season (ZEMA et al., 2012).

Since 1960, Zambia's average annual temperature has risen by 1.3°C, with rainfall declining by 1.9 mm per month (MGEE, 2024). These trends are expected to intensify, especially in the southern and western regions. In 2021, Zambia ranked 132 out of 185 countries in the Notre Dame Global Adaptation Initiative (NO-GAIN) Country Index, indicating its high vulnerability to climate change, with limited readiness to adapt to negative impacts (The World Bank, 2023; IFPRI, 2023). Climate impacts are evident in unpredictable agriculture seasons, more frequent droughts, and intense rainfall leading to floods, affecting agriculture, water, energy, health and infrastructure sectors. Threatening traditional livelihood, food security and the economy.

The impacts of climate change call for immediate and sustained efforts to mitigate further damage and adapt to the changing environment. Communities across Zambia are learning to adapt to new realities, embracing climate-resilient farming techniques, improving water management, and

preparing for extreme weather events. These efforts will not only help mitigate the effects of climate change but will also ensure a more sustainable future for generations to come.

The world may be changing, but with proactive adaptation, collaboration, and innovation, we can shape a future that is more resilient and sustainable, ensuring that Zambia thrives in the face of these global challenges.

CHAPTER 2: AGRICULTURE

Zambia's agriculture sector is highly sensitive to climate change, with droughts, floods, and extreme temperatures posing significant risks to food security and livelihoods (Kalantary, 2010). Changes in rainfall patterns, such as excessive precipitation in non-drought-prone areas and longer dry spells in drought-prone regions, impact both forests and crop yields (Kalantary, 2010). The 2023/2024 farming season, for instance, was severely affected by El Niño, leading to reduced yields.

Approximately 67% of Zambians are employed in the agricultural sector which primarily relies on rainfed farming methods, making farmers a vulnerable population (Ministry of Agriculture and Ministry of Fisheries and Livestock, 2016). Furthermore, traditional slash-and-burn farming practices contribute to carbon emissions and have led to soil erosion, increased water turbidity, and siltation (ZEMA et al., 2012).

In response, some farmers are adopting sustainable practices such as mulching, cultivating drought-resistant crops, diversifying crops, and exploring alternative food sources. Addressing these issues is essential for promoting sustainable land management, mitigating climate change, and ensuring a resilient future for agriculture. The impacts of climate on agriculture have been documented across Central, Lusaka, Muchinga, and Northern Provinces.

"It is time for people to move away from the old methods of farming and start practicing Smart agriculture, this will enable people produce a lot of crops within a short time and have improved yields."

Hon. Inonge Mutukwa Wina, Vice President of Zambia 2015-2021

Photograph by Noah Harris Makwilimba, Mumbwa, Central Province, June 23, 2024

Signs of water stress show in drought-lodged maize stalks, where lack of water has stunted vegetative growth, reducing pollination and delaying maturation leading to complete crop loss for farmers in the 2023/2024 season.

Photograph by Exildah Kamundonu, Lusaka, Lusaka Province, May 16, 2024

Withering tomato plants at Natural Resources Development College, affected by rising temperatures and prolonged drought.

Photograph by Prince Kunda, Kanchibiya, Muchinga Province, September 21, 2024

A scorched agricultural field reveals the harsh impact of unsustainable land practices on the environment that exacerbate climate change and contribute to extreme weather events.

Photographs by Alfred Nkole, Kasama, Northern Province, September 11, 2024

The Chitemene system contributes to deforestation, disrupting water cycles and leading to droughts, reduced agricultural yields, food shortages, and increased poverty for many families.

Photograph by Inonge Nawa Lifanu, Lusaka, Lusaka Province, August 29, 2024

Mulching is implemented to combat drought and extreme heat by preserving soil moisture, improving soil structure (texture and aeration), and adding organic matter.

Photograph by ZANIS, Mpika, Muchinga Province, March 5, 2024

The cultivation of drought-resistant winter maize by the Correctional Service Farm in Mpika represents a strategic shift from rainfed maize to strengthen food security, empower local communities, and reduce reliance on imported food.

CHAPTER 3: FORESTRY

Forests are vital to Zambia's biodiversity, livelihoods, and food security, but climate change poses serious threats to this sector. Higher temperatures and droughts can prevent the natural regeneration of indigenous forests (Kalantary, 2010). Furthermore, loss of forests damages ecosystems, endangering species like edible caterpillars that rely on trees for food. The loss of forest cover also reduces carbon absorption, worsening climate change.

Forests cover about 45.9 million hectares, or roughly 61% of Zambia's total landmass (MGEE, 2024). However, the country faces an annual deforestation rate of 250,000 to 300,000 hectares, driven by demand for wood fuel, agriculture, mining, timber, wildfires, and infrastructure expansion (Matakala, et al., 2015). Timber production, though economically beneficial, also accelerates emissions, reduces biodiversity, and depletes soil nutrients critical for ecosystem health and climate regulation. Deforestation, coupled with forest degradation, is Zambia's largest contributor to GHG emissions (MGEE, 2024).

To mitigate these impacts, sustainable forestry management, afforestation, reforestation, and community-based initiatives are crucial. These efforts can help preserve biodiversity, support rural livelihoods, and address the issue of climate change in Zambia. The impacts of climate on forestry have been illustrated across Central, Southern, and Western Provinces.

"Climate change cannot be fought in isolation; we need global consented efforts. We are all affected by the devastating effects of climate change."

Hon. Eng. Collins Nzovu

Photograph by Anayawa Nyambe, Sioma, Western Province, January 3, 2022

Timber production supports local livelihoods but can negatively impact the climate through deforestation.

Timber, offcuts, and waste management.

Photographs by Anayawa Nyambe, Sioma, Western Province, August 26, 2021

Photographs by Anayawa Nyambe, Monze, Southern Province, August 8, 2021

A local teacher inspired change in the rural community through a dedicated tree planting program. This initiative addresses climate change, beautifies the environment and fosters a sense of ownership among residents.

Photographs by Anayawa Nyambe, Chisamba, Central Province, January 24, 2016.

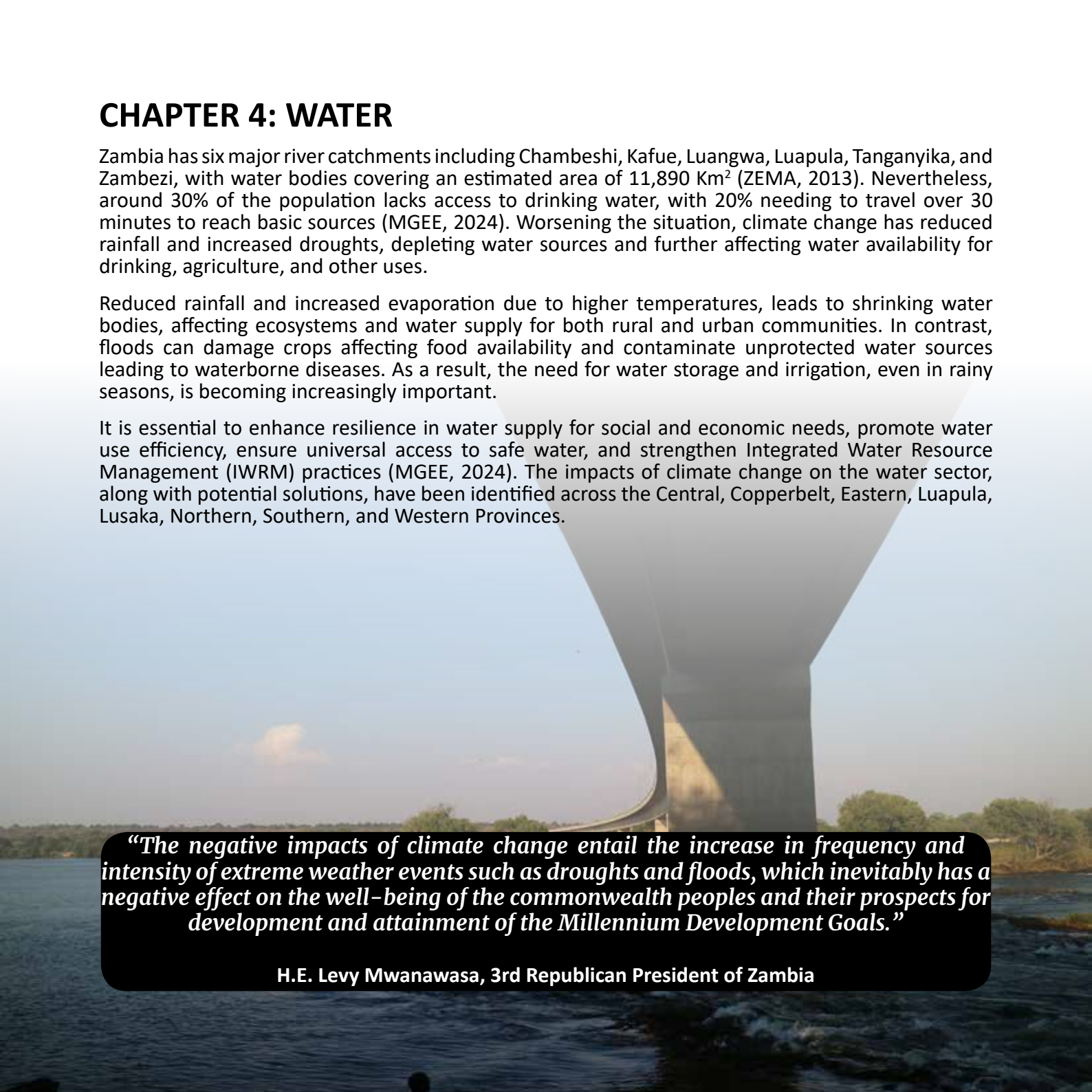
Edible insects, such as caterpillars, are a high-protein delicacy and lucrative business. However, with decreasing rainfall, rising temperatures, and fewer trees for forage, this delicacy may soon become a distant memory.

CHAPTER 4: WATER

Zambia has six major river catchments including Chambeshi, Kafue, Luangwa, Luapula, Tanganyika, and Zambezi, with water bodies covering an estimated area of 11,890 Km^2 (ZEMA, 2013). Nevertheless, around 30% of the population lacks access to drinking water, with 20% needing to travel over 30 minutes to reach basic sources (MGEE, 2024). Worsening the situation, climate change has reduced rainfall and increased droughts, depleting water sources and further affecting water availability for drinking, agriculture, and other uses.

Reduced rainfall and increased evaporation due to higher temperatures, leads to shrinking water bodies, affecting ecosystems and water supply for both rural and urban communities. In contrast, floods can damage crops affecting food availability and contaminate unprotected water sources leading to waterborne diseases. As a result, the need for water storage and irrigation, even in rainy seasons, is becoming increasingly important.

It is essential to enhance resilience in water supply for social and economic needs, promote water use efficiency, ensure universal access to safe water, and strengthen Integrated Water Resource Management (IWRM) practices (MGEE, 2024). The impacts of climate change on the water sector, along with potential solutions, have been identified across the Central, Copperbelt, Eastern, Luapula, Lusaka, Northern, Southern, and Western Provinces.



"The negative impacts of climate change entail the increase in frequency and intensity of extreme weather events such as droughts and floods, which inevitably has a negative effect on the well-being of the commonwealth peoples and their prospects for development and attainment of the Millennium Development Goals."

H.E. Levy Mwanawasa, 3rd Republican President of Zambia

Once reaching as far as the tree line, this river-fed swamp now dwindles due to climate change, making it difficult for both people and livestock to access water.

Photograph by Abigirl Saungweme, Kabwe, Central Province, August 23, 2024

A shrinking water source in Muyembe, Mporokoso, due to extended droughts, unpredictable weather and rising temperatures, is impacting food security and livelihoods.

Photograph by Bertha Musonda, Muyembe, Mporokoso, Northern Province, September 19, 2024

Photograph by Moses Musonda, Kabwe, Central Province, August 13, 2024

A shrinking water source in Nakoli, Kabwe, lies surrounded by dry, cracked earth and withering vegetation, jeopardizing irrigation, crop yields, and livelihoods.

The Kaumba Stream in Monze, once a robust river, now lies completely dried up, surrounded by parched land and struggling vegetation.

Photograph by Moses Musonda, Monze, Southern Province, August 21, 2024

Once a vital water source for the community, this well now stands dry and closed, its damaged structure serving as a reminder of the area's dwindling water resources.

Photograph by Mike Tembo, Petauke, Eastern Province, September 14, 2024

A man stands by a dry hand pump, hands raised in uncertainty, as dwindling water levels render community wells and water points empty.

Photograph by Gidion David Lungu, Mansa, Luapula, August 24, 2024

Project Sheluka, which aims to install Stand Point Wells and Barotse Strong Pumps, was inspired when a young girl expressed to visiting water scientists (hydrologists) her heartfelt wish for access to clean reliable water.

Photograph by John Simasiku, Sioma, Western Province, August 11, 2024

Photograph by ZANIS, Kitwe, Copperbelt Province, October 3, 2020

A new borehole drilled in Mufuchani, Kitwe, on land designated for flood victims and displaced families. This initiative provides vital access to clean water for the affected community amidst climate-related challenges.

Photographs by Anayawa Nyambe, Lusaka, Lusaka Province, March 22, 2021

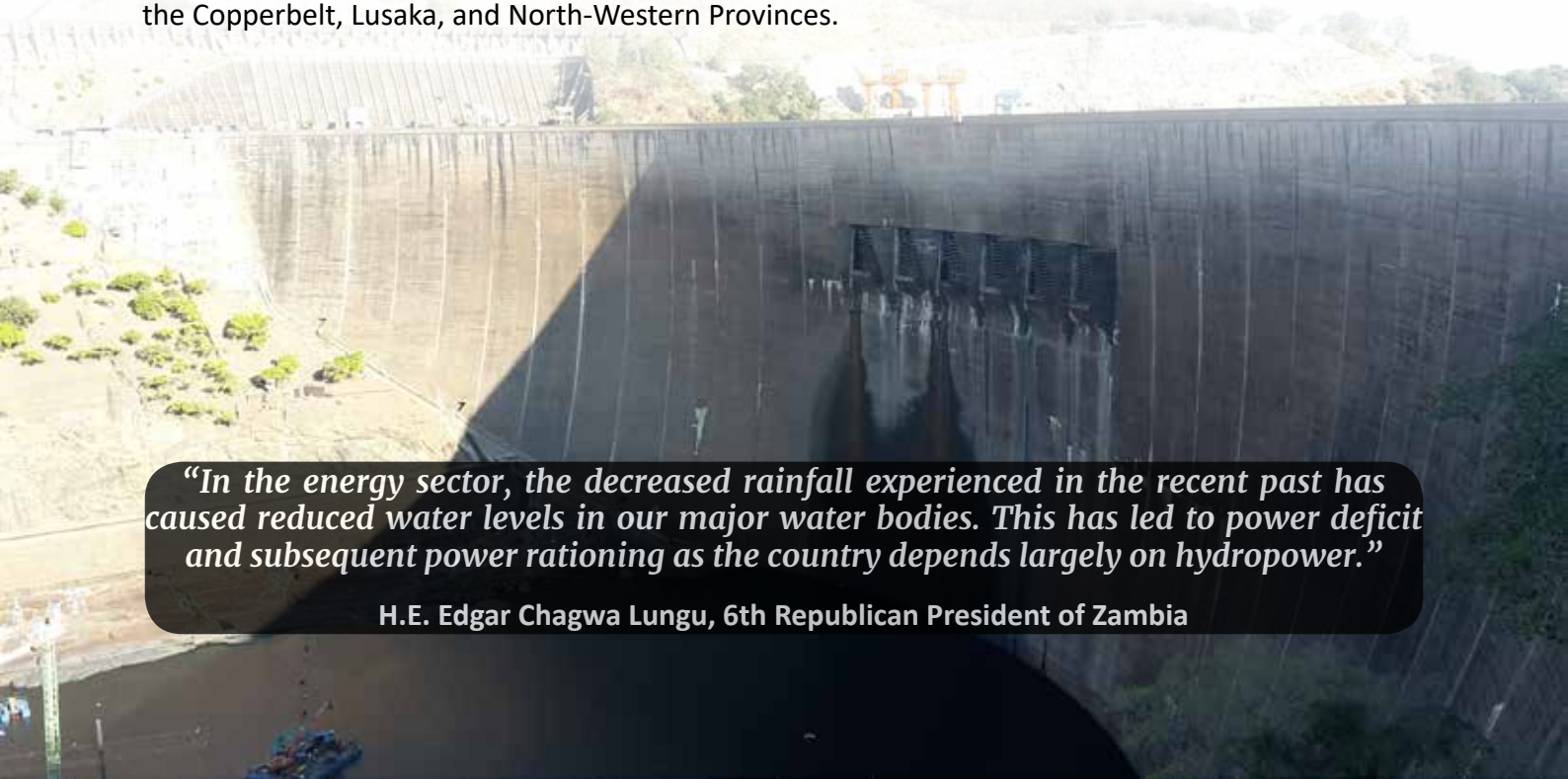
Taking climate action one drop at a time by harvesting rainwater. Rainwater harvesting at home ensures water security, even during droughts, reduces reliance on council water and conserves this precious resource.

CHAPTER 5: ENERGY

Zambia's primary energy sources include electricity, wood fuel, and petroleum products, with renewable options such as hydro, geothermal, wind, and solar energy (MGEE, 2024). As Zambia strives to balance energy demands with environmental protection, climate change both complicates and drives the transition to renewable energy.

However, the country's reliance on hydroelectric power makes the energy sector vulnerable to climate-related disruptions such as droughts. The lack of water has led to electricity load-shedding, as experienced in the periods of 2015−2017, 2022−2023 and 2024 (Chitandula, et al., 2024). This has prompted an increased focus on water-independent renewable energy alternatives such as solar, wind, geothermal and biomass (Chitandula, et al., 2024).

With electricity access available to just over 30% of the population, charcoal and firewood are still heavily relied upon (MGEE, 2024). Charcoal production is widespread across Zambia and plays a significant role in the country's economy and daily life. However, it also presents serious environmental challenges, contributing to deforestation, forest degradation, and heightened GHG emissions, all of which worsen the environment. Moreover, traditional charcoal production methods are inefficient, recovering only about 20% of the biomass as charcoal (MGEE, 2024). As an alternative, briquettes made from agricultural or forestry waste offer a sustainable option that mitigates some effects of climate change. These challenges and solutions for Zambia's energy sector are evident in the Copperbelt, Lusaka, and North-Western Provinces.



"In the energy sector, the decreased rainfall experienced in the recent past has caused reduced water levels in our major water bodies. This has led to power deficit and subsequent power rationing as the country depends largely on hydropower."

H.E. Edgar Chagwa Lungu, 6th Republican President of Zambia

Photograph by Abel Kamfwa, Mwinilunga, North-Western Province, February 20, 2024

Members of the Zambia National Forest Commodities Association learn charcoal briquette production to support sustainable forest management, mitigate climate change and strengthen rural communities through a circular economy for a greener future.

Transport and Communications Permanent Secretary Misheck Lungu, alongside Necor Engineers, inspects newly installed solar panels at the Meteorological Department. This initiative advances sustainable energy use to improve climate data accuracy and weather forecasting efficiency.

Photographs by ZANIS, Lusaka, Lusaka Province, July 20, 2021

Photograph by Mundia Nyambe, Kitwe, Copperbelt Province, August 5, 2024

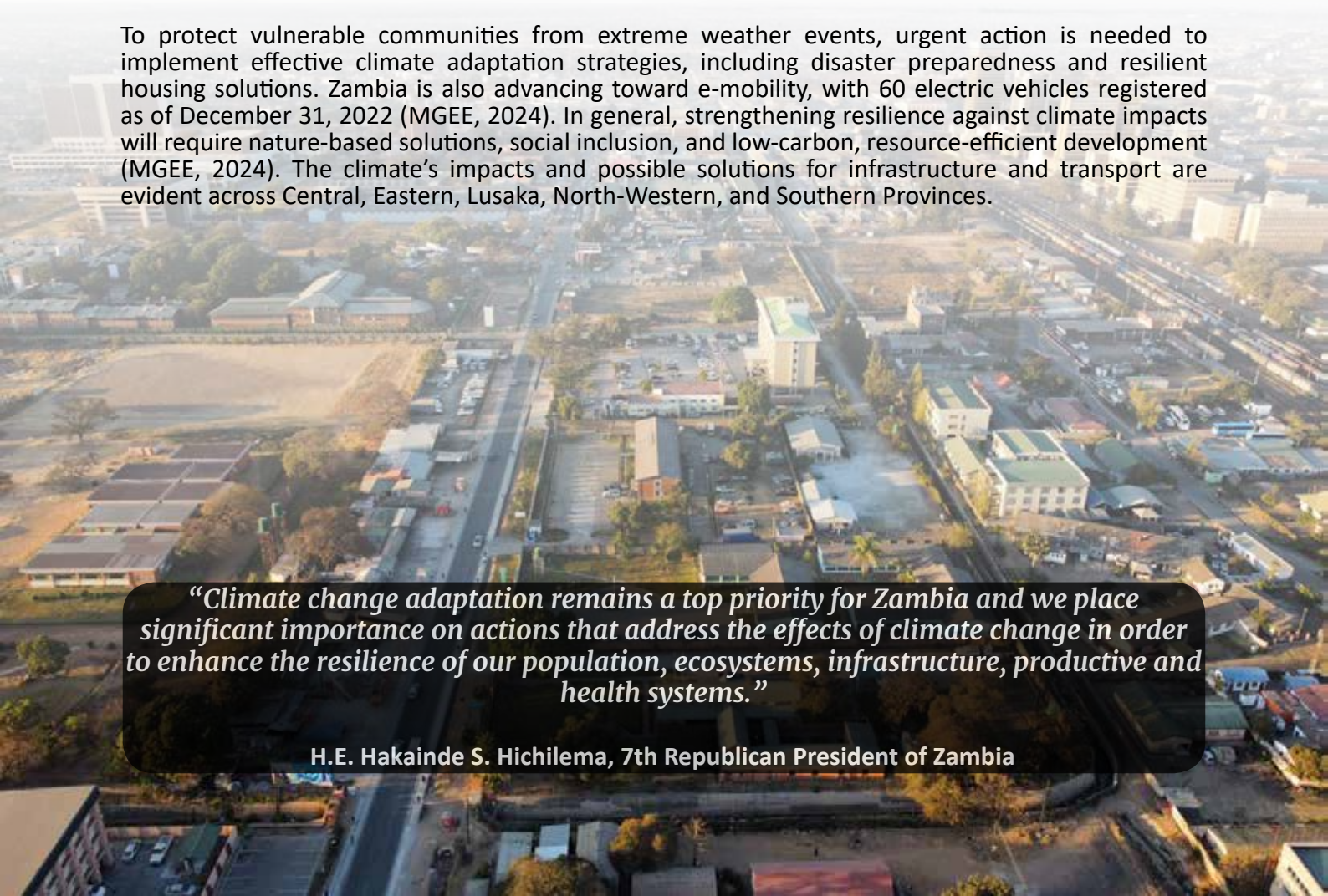
Solar panels installed in Kitwe showcase the district's commitment to renewable energy solutions and diversifying from hydropower, which has been greatly affected by the drought leading to countrywide load shedding.

CHAPTER 6: INFRASTRUCTURE AND TRANSPORT

Infrastructure and transport are essential for driving productivity and economic growth, yet Zambia faces significant infrastructure gaps across transport and housing, which limit development and lower the quality of life for its citizens (MGEE, 2024).

Infrastructure contributes to GHG emissions and biodiversity loss due to deforestation for development. Additionally, road transport which is popular for 97% of cargo and 98% of passenger movement has led to a rise in fossil fuel vehicle imports ultimately increasing GHG emissions and pollution (MGEE, 2024). Nevertheless, both sectors are also vulnerable to climate change. This is evident in climate-related damages such as road and bridge washouts from flooding and building damage from extreme weather events.

To protect vulnerable communities from extreme weather events, urgent action is needed to implement effective climate adaptation strategies, including disaster preparedness and resilient housing solutions. Zambia is also advancing toward e-mobility, with 60 electric vehicles registered as of December 31, 2022 (MGEE, 2024). In general, strengthening resilience against climate impacts will require nature-based solutions, social inclusion, and low-carbon, resource-efficient development (MGEE, 2024). The climate's impacts and possible solutions for infrastructure and transport are evident across Central, Eastern, Lusaka, North-Western, and Southern Provinces.



"Climate change adaptation remains a top priority for Zambia and we place significant importance on actions that address the effects of climate change in order to enhance the resilience of our population, ecosystems, infrastructure, productive and health systems."

H.E. Hakainde S. Hichilema, 7th Republican President of Zambia

Photographs by ZANIS, Chilanga, Lusaka Province, December 26, 2020

Residents of Garden House climb onto rooftops to escape rising floodwaters, watching helplessly as their homes are submerged. Meanwhile, with streets and homes engulfed, many walk-through flooded areas to reach safety.

Photograph by ZANIS, Mumbwa, Central Province, December 26, 2020

Photograph by ZANIS, Mumbwa, Central Province, December 27, 2020

Photographs by ZANIS, Mumbwa, Central Province, December 27, 2020

Heavy rainfall caused the Kandesha Dam to burst in Mumbwa, creating flash floods that devastated the community, destroying homes, washing away the Mamwe Bridge, and flooding maize fields.

Photograph by ZANIS, Chilanga, Lusaka Province, December 31, 2020

Residents of Chilanga navigate the aftermath of heavy downpours, shifting their household goods to safety as floodwaters disrupted their lives.

Photographs by ZANIS, Mwembeshi, Central Province, November 12, 2021

Temporary makeshift shelters organized at Mwembeshi Basic School grounds after heavy rains destroyed homes and forced families to seek temporary shelter.

Photograph by ZANIS, Nyimba, Eastern Province, December 5, 2020

The impacts of extreme weather events were visible after a powerful hail storm swept through Nyimba district leaving a house destroyed and roofless.

Photographs by ZANIS, Namwala, Southern Province, October 19, 2023

The aftermath of heavy rains in Namwala, reveals the devastating impact of flash floods on road infrastructure by forming gullies and damaged roads. These disruptions hinder mobility and also threaten the livelihoods of residents.

Photograph by Anayawa Nyambe, Chipata, Eastern Province, May 28, 2020

Witnessing the power of simple eco-friendly solutions. In Chipata, bicycles are more than just a mode of transport to navigate the city. They're a symbol of sustainability, reducing carbon emissions and promoting healthier lifestyles.

Photograph by ZANIS, Kasempa, North-Western Province, September 24, 2023

The newly constructed Kalusha Day School stands strong in Kasempa, rising from the challenges of a devastating hailstorm that destroyed the old building.

Traditional huts, made with natural materials like thatched roofs and mud-brick/log walls, offer a sustainable, climate-resilient housing model, providing natural insulation, ventilation, and energy efficiency, making them a model for modern eco-friendly housing solutions.

Photographs by Rodney Sikamwayi, Chisamba, Central Province, January 24, 2021

Photograph by ZANIS, Katete, Eastern Province, April 4, 2021

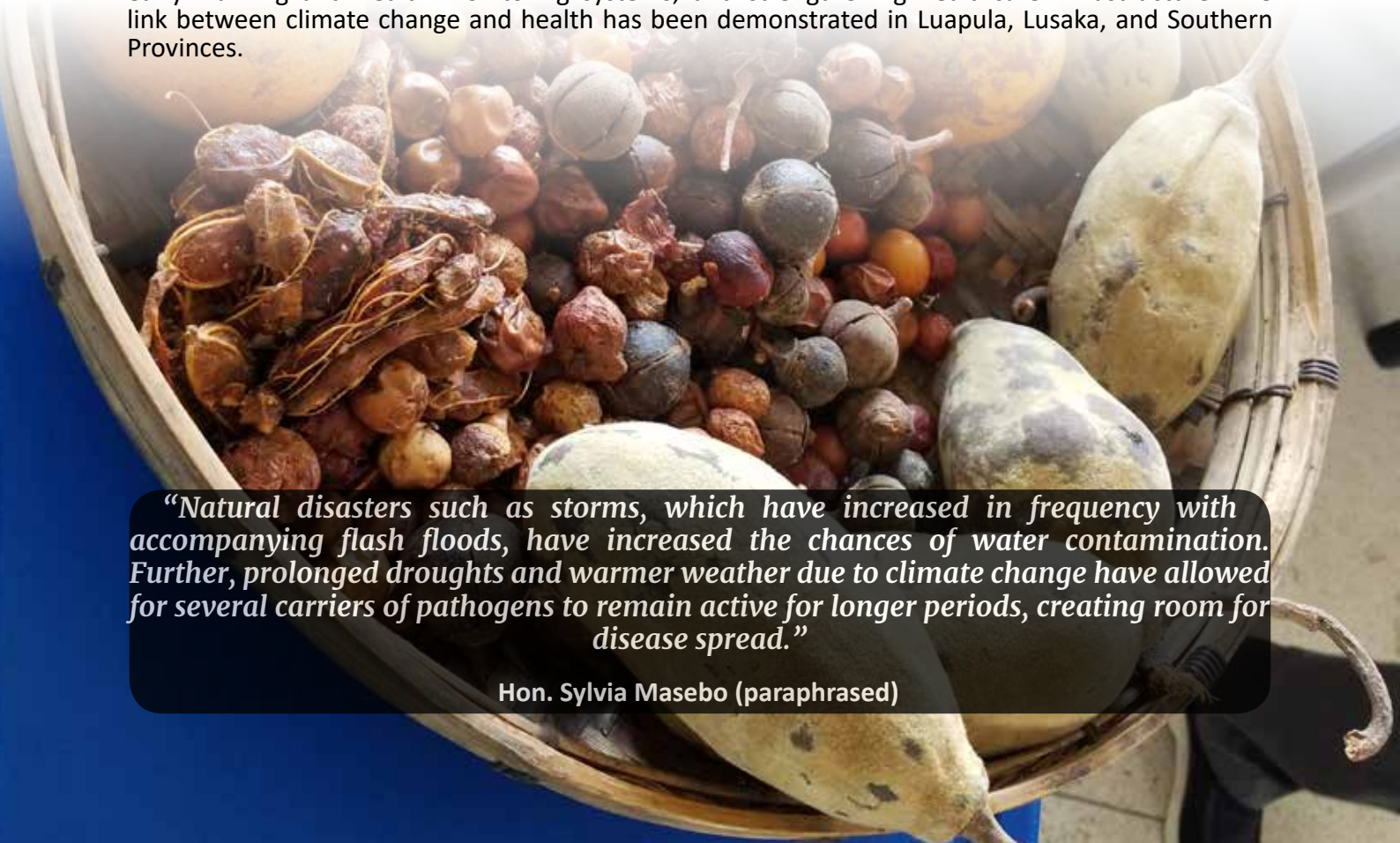
Solar panels provide clean, sustainable energy, enhancing rural electrification for homes in Undi Village, Katete.

CHAPTER 7: HEALTH

Climate change is intensifying health risks by worsening climate-sensitive diseases and increasing mortality rates (Kalantary, 2010). In Zambia, it has led to the expanding of disease vector habitats for malaria, bilharzia and increased incidences of cholera, typhoid and dysentery (MGEE, 2024).

Climate changes main impact on public health categorized as direct or indirect. Direct impacts include injuries from extreme weather events like floods, heat-related illness like heat stress from exposure to extreme temperatures, and respiratory problems like asthma due to pollution from wildfires. Indirect impacts arise from climate change's effect on broader systems: for instance, drought-induced water scarcity can lead to crop failures and malnutrition; flooding increases the spread of waterborne diseases like cholera and vector-borne illnesses like malaria; and extreme weather events can result in mental health issues due to displacement and loss of livelihoods (Ministry of Health, 2017).

To address these health impacts, strategies include raising public awareness, implementing effective early warning and health monitoring systems, and strengthening healthcare infrastructure. The link between climate change and health has been demonstrated in Luapula, Lusaka, and Southern Provinces.



"Natural disasters such as storms, which have increased in frequency with accompanying flash floods, have increased the chances of water contamination. Further, prolonged droughts and warmer weather due to climate change have allowed for several carriers of pathogens to remain active for longer periods, creating room for disease spread."

Hon. Sylvia Masebo (paraphrased)

Photograph by Anayawa Nyambe, Luangwa, Lusaka Province, October 19, 2024

Photograph by Imasiku Nyambe, Lusaka, Lusaka Province, December 5, 2019

A display of local sun hats at a market emphasizes the importance of sun protection in the face of rising temperatures and increased sun exposure.

Traditional fridges or evaporative coolers, made from local materials and recycled plastic bottles, help farmers adapt to heat stress by providing cool, refreshing drinking water.

Photograph by Anayawa Nyambe, Monze, Southern Province, August 8, 2021

Powered by reliable 3.5-kilowatt solar panels, the Nambale Rural Health Centre in Chifunabuli is transforming healthcare delivery. The solar-powered wards, allow healthcare workers to provide better care to patients.

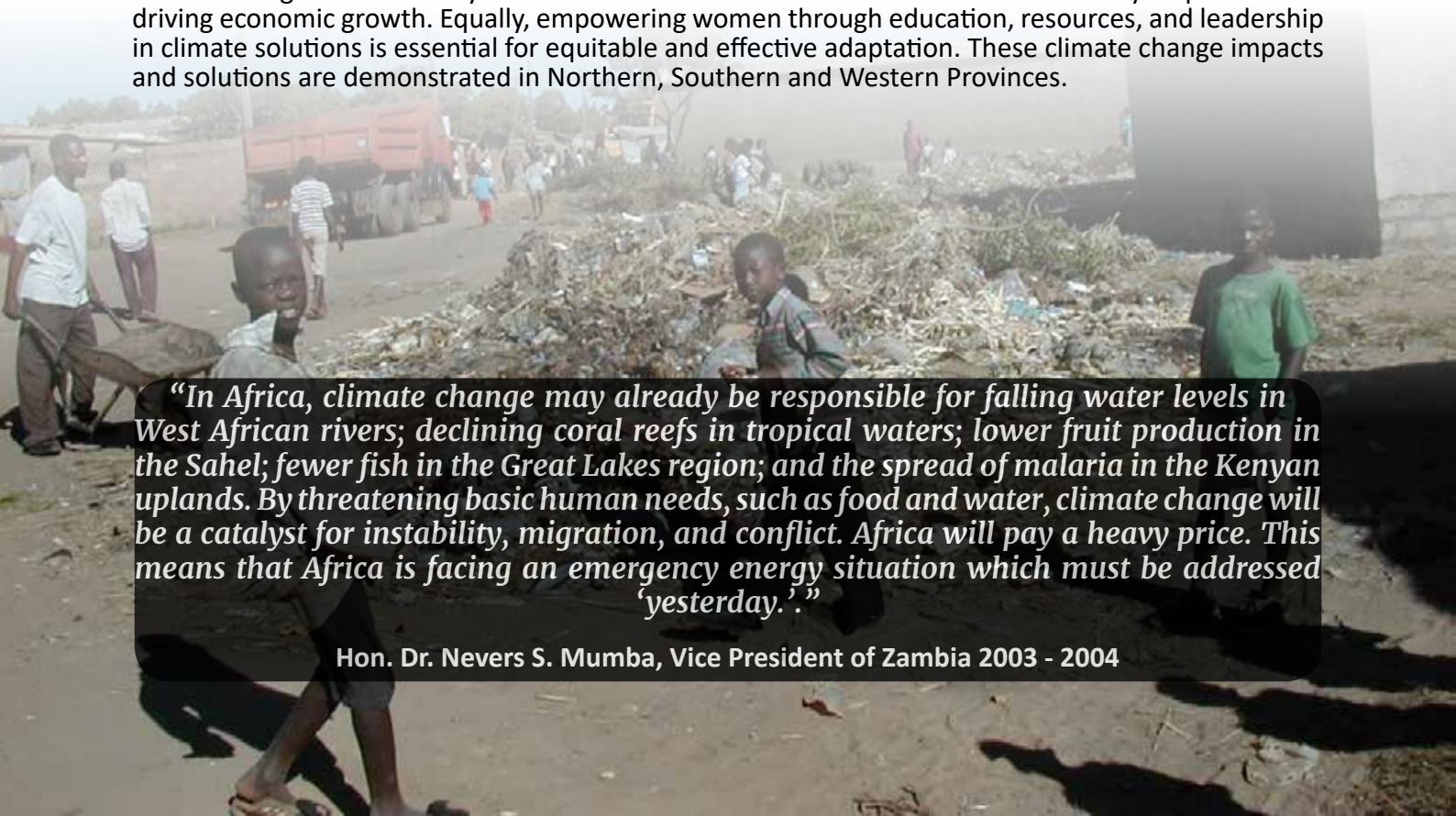
Photographs by ZANIS, Chifunabuli, Luapula Province, May 17, 2024

CHAPTER 8: SOCIAL AND ENVIRONMENT

Climate change affects both social dynamics and the environment, disrupting community stability and disproportionately impacting women. Social and economic inequalities increase women's workload, health risks, and vulnerability to food insecurity and violence. Climate-induced challenges such as water scarcity, food insecurity, and land degradation also drive human migration from affected areas to regions with greater resources, placing additional pressure on infrastructure and social services.

The tourism sector is especially at risk due to pressures such as encroachment on protected areas, poaching, deforestation, charcoal production, wildfires and mining (MGEE, 2024). Zambia has over 3,600 wildlife species (MGEE, 2024), many of which are increasingly facing food shortages, disrupted migration routes, and health challenges. Drought conditions reduce soil moisture, leading to poor-quality fodder, stress, and uncontrolled migration among wildlife (MGEE, 2024). As wildlife ventures closer to human settlements in search of food and water, wildlife-human conflicts are increasing, leading to crop and property damage.

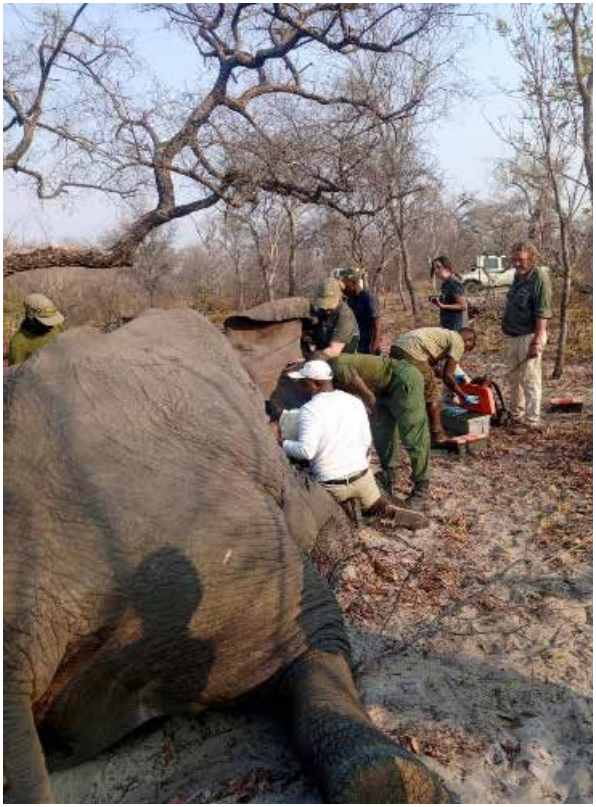
Amid these challenges, sustainable practices offer promising solutions. For instance, sustainable fashion using local and recycled materials can reduce reliance on resource-heavy imports while driving economic growth. Equally, empowering women through education, resources, and leadership in climate solutions is essential for equitable and effective adaptation. These climate change impacts and solutions are demonstrated in Northern, Southern and Western Provinces.



"In Africa, climate change may already be responsible for falling water levels in West African rivers; declining coral reefs in tropical waters; lower fruit production in the Sahel; fewer fish in the Great Lakes region; and the spread of malaria in the Kenyan uplands. By threatening basic human needs, such as food and water, climate change will be a catalyst for instability, migration, and conflict. Africa will pay a heavy price. This means that Africa is facing an emergency energy situation which must be addressed 'yesterday.'."

Hon. Dr. Nevers S. Mumba, Vice President of Zambia 2003 - 2004

Photograph by David Munyama, Mwandi Western Province, September 29, 2024



Photographs by David Munyama, Mwandi Western Province, September 29, 2024

In rural areas, food scarcity drives human-wildlife conflicts, as elephants leave national parks to forage on village farms.

Drought-driven fish scarcity has led some fishermen to use illegal nets and engage in sexual transactions for fish, even when women are able to pay. The Resilient Inclusive Sustainable Environment project empowers women through awareness, Gender Based Violence support, and community-led solutions.

Photograph by Samantha Munang'andu, Nalolo, Western Province, September 1, 2024

Photograph by Anayawa Nyambe, Monze, Southern Province, October 10, 2020

Fishing communities from Luapula Province migrate to Lochinvar National Park in Southern Province in search of fish farming opportunities as climate change and overfishing diminish their traditional way of life.

The 'Peculiar Shirt Collection' by Yande Yombwe, transforms reclaimed materials like tree fibers, rusty metal, plastic, traditional chitenge fabric and second-hand garments into sustainable fashion.

Photographs by Prince G Media, Livingstone, Southern province, April 10, 2024

Photograph by ZANIS, Kasama, Northern Province, January 10, 2024

Kasama Mayor Theresa Kolala engages with beneficiaries of the Social Cash Transfer program as part of the relief efforts addressing drought-induced hunger. Programs like these demonstrate the importance of government intervention in aiding communities facing climate challenges.

CHAPTER 9: THE ROAD AHEAD

As Zambia continues to face the growing impacts of climate change, the future of climate action lies in the resilience and innovation of its people. At national level, the government has responded to the effects and impacts of climate change through a number of international and national efforts (e.g., the Paris Agreement, National Policy Climate Change, National Adapation Plan, etc.) (MGEE, n.d.). These responses contribute to global commitments, policy development, community, stakeholder collaboration, and public engagement via visible projects.

Across the country, local communities are rising to the challenge, adapting to changing conditions, and pioneering sustainable solutions that offer hope for a better tomorrow. From traditional water storage bottles to renewable energy initiatives, these grassroots efforts demonstrate the power of local action in driving meaningful change.

However, the road ahead remains long. For Zambia to build a truly sustainable and climate-resilient future, continued support is essential. Global partnerships, investment in green technologies, and knowledge-sharing platforms must work in harmony with local and traditional innovations. It is through these collaborations that Zambia can overcome the challenges posed by climate change, protect its natural resources, and secure a prosperous future for its people.

The stories captured in this book remind us that every action counts. By nurturing the ingenuity of local communities and fostering strong alliances with global partners, Zambia can stand as a beacon of strength and leadership in the face of climate adversity. Together we can pave the way for a greener, more resilient Zambia. One where future generations can thrive in harmony with their environment.

Books and Published Sources

[1] Chitandula A, Abuzayed A, Nyoni KJ, Vilalta AS, Maliye RL, Kabla E, & Cheelo C (2024). Part One of a three-part series for the GoPRO-Zambia Research Project: Status Quo of the Energy System and Consumption in Zambia. Climate Compatible Growth, pp. 28

[2] International Food Policy Research Institute (2023). From Climate Risk to Resilience: Unpacking the Economic Impacts of Climate Change in Zambia, https://africanclimatefoundation.org/wp-content/uploads/2023/11/800835-ACF-Zambia-country-note-04.pdf [Accessed November 8, 2024]

[3] Kalantary C (2010). Climate Change in Zambia: Impacts and Adaptation. Global Majority E-Journal, Vol. 1, No. 2 (December 2010), pp. 85-96

[4] Matakala PW, Kokwe M & Statz J (2015). Zambia National Strategy to Reduce Emissions from Deforestation and Forest Degradation (REDD+). UN-REDD Programme, pp. 63

[5] Ministry of Green Economy and Environment (2024). National Green Growth Strategy 2024-2030, pp. 93

[6] Ministry of Green Economy and Environment (n.d.). National Climate Change Communication and Advocacy Strategy. pp. 48

[7] Ministry of Health (2017). Zambia Health National Adaptaion Plan, UNDP, Lusaka, pp. 78

[8] Ministry of Agriculture and Ministry of Fisheries and Livestock (2016). Second National Agricultural Policy. The Republic of Zambia. pp. 20

[9] The World Bank (2023). Transport Corridors for Economic Resilience (TRACER) (P180801), Project Information Document (PID), https://documents1.worldbank.org/curated/en/099121823145031500/pdf/P18080108c4a9f0a09b2a06eb40102247f.pdf [Accessed November 8, 2024]

[10] ZEMA, GRID-Arendal, GRID-Sioux Falls, UNEP (2012). Zambia Atlas of Our Changing Environment. ZEMA, GRID-Arendal, GRID-Sioux Falls, UNEP. Lusaka, Arendal, Sioux Falls and Nairobi, pp.124

Quotes from Individuals

[1] Government of Zambia (2022). Statement by the President of the Republic of Zambia Mr. Hakainde Hichilema During the United Nations Framework Convention on Climate Change, COP-27 World Leaders Summit, Sharm EL Sheikh, Egypt 7th – 8th November 2022, https://unfccc.int/sites/default/files/resource/ZAMBIA_cop27cmp17cma4_HLS_ENG.pdf [Accessed October 12, 2024].

[2] Lusaka Times (2008). Government will address climate change – Levy, https://www.lusakatimes.com/2008/03/10/government-will-address-climate-change-%E2%80%93-levy/#google_vignette [Accessed October 12, 2024].

[3] Lusaka Times (2016). Nevers Mumba addresses the Marrakesh, Morocco Climate Change Symposium, https://www.lusakatimes.com/2016/11/14/nevers-mumba-addresses-the-marrakesh-morocco-climate-change-symposium/ [Accessed October 12, 2024].

[4] Lusaka Times (2016). President Lungu says Climate Change Affecting Zambia's Development, https://www.lusakatimes.com/2016/11/16/president-lungu-says-climate-change-affecting-zambias-development/ [Accessed October 12, 2024].

[5] Lusaka Times (2021). VEEP calls for robust response against climate change, https://www.lusakatimes.com/2021/07/12/veep-calls-for-robust-response-against-climate-change/ [Accessed October 12, 2024].

[6] Lusaka Times (2024). Human activities have caused climate change and human beings must take responsibility – Nzovu, https://www.lusakatimes.com/2024/03/02/human-activities-have-caused-climate-change-and-human-beings-must-take-responsibility-nzovu/ [Accessed October 12, 2024].

[7] Mfula C (2024). Ministerial Statement on the Cholera Outbreak in Zambia, https://www.moh.gov.zm/?p=3549 [Accessed October 12, 2024].

EDITORIAL AND PRODUCTION TEAM

Author

Anayawa Nyambe

Partners

Charity Nalweya, ZEMA

Morris Manyika, SASSCAL

Frank Gwaba, MGEE

Curators

Anayawa Nyambe

Charity Nalweya, ZEMA

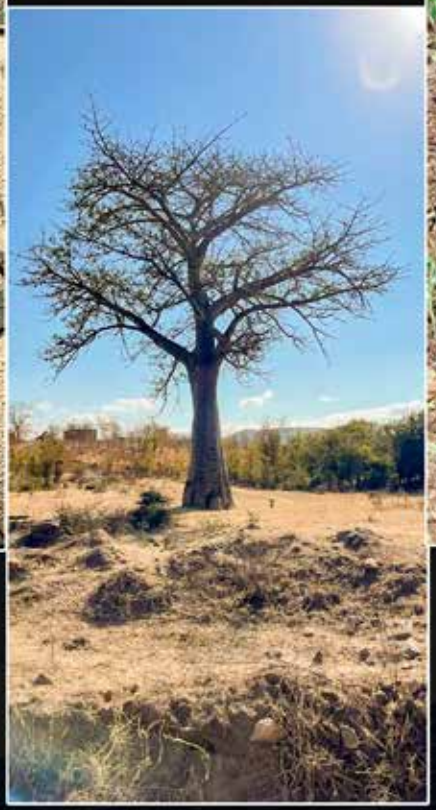
Morris Manyika, SASSCAL

Editor

Frank Gwaba, MGEE

Design

Imasiku Nyambe, DigiKraft Media

Media and Communications Expert

Wells Chifunda